

NIKITIN, V. F.

Poultry raising. Moscow, U.S.S.R. 1941. 11 p.

NIKITIN, V.P.

Occurrence of the black rat in the Far East. Izv. Irk.gos. protivochum. inst. 10:86-87 '52. (MIRA 10:12)
(SOVIET FAR EAST—RATS)

NIKITIN, V.P.

Biology of the ratlike hamster. Izv. Irk.gos. protivochum. inst.
10:111-115 '52. (MIRA 10:12)
(MARITIME TERRITORY--HAMSTERS)

NIKITIN, V. I.

Iuskrats

Iuskrat and the "kazako." Priroda 41 No. , 1952.

Monthly List of Russian Accessions. Library of Congress. November 1952. UNCLASSIFIED.

NIKITIN, Viktor Petrovich

[Poultry raising] Ptitssevodstvo. Izd. 2-oe, dop. i ispr. Moskva,
Gos. izd-vo selkhoz. lit-ry, 1955. 145 p. (MIRA 9:10)
(Poultry)

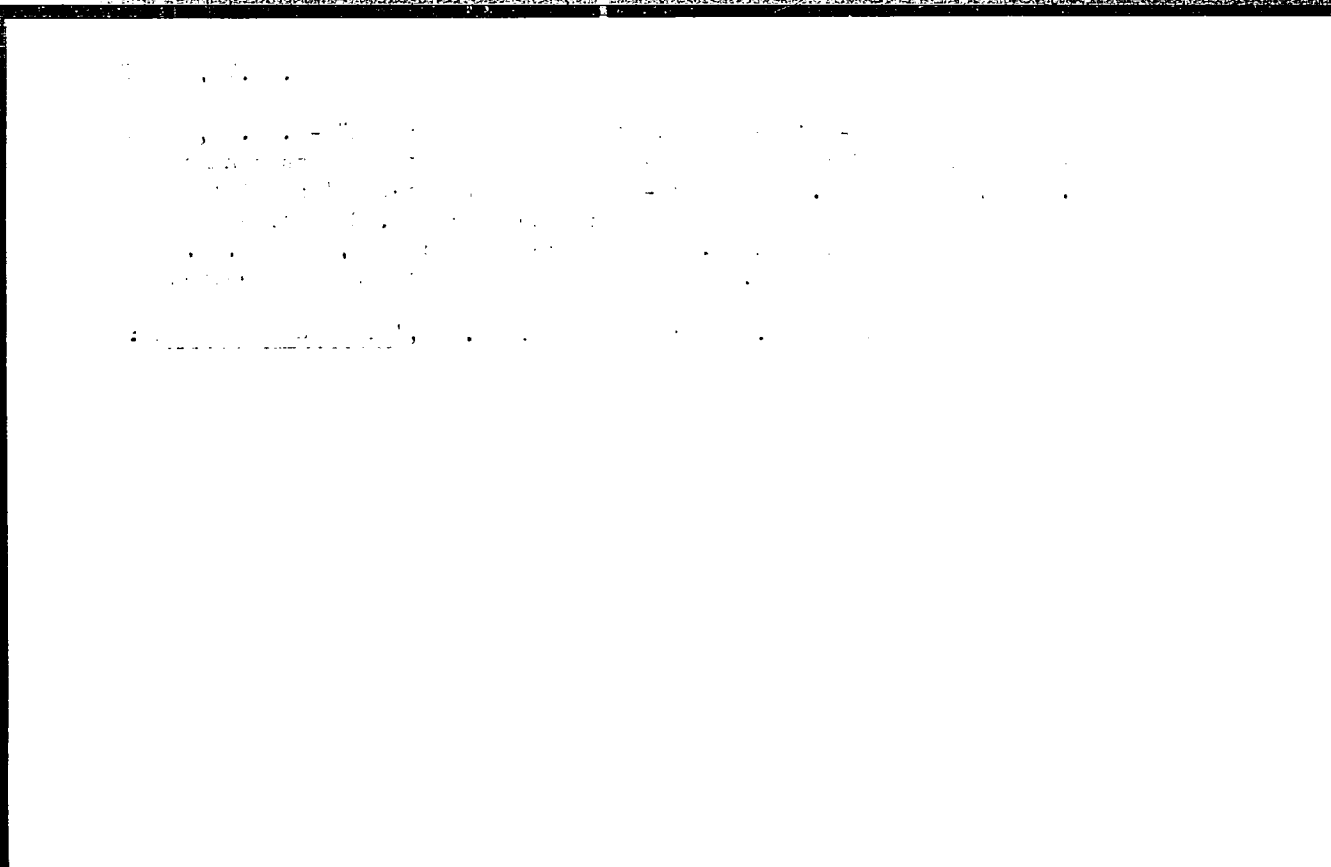
MILOVANOV, A.F.; ZHERNOVOV, I.V.; NIKITIN, V.P.

New jerboa species in Turkmenia (*Allactaga bobrinskii* Kolesn.).
Izv. AN Turk. SSR no.5:97 '58. (MIRA 11:12)

1. Turkmenskaya protivochumnaya stantsiya.
(Turkmenistan--Jerboas)

"APPROVED FOR RELEASE: 07/19/2001

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APPROVED FOR RELEASE: 07/19/2001

CIA-RDP86-00513R001137020003-4"

NIKITIN, V.S.

Regeneration of the skeletal muscle in white mice after electric injury.
Biol. eksp. biol. i med. 51 no.5:107-112 My '61. (MIRA 14:2)

1. Iz kafedry biologii (zav. - prof. G.M.Litver) I Leningradskogo
meditsinskogo instituta imeni I.P.Pavlova. Predstavlena deystvitel'ny
chlenom AMN SSSR A.V.Lebedinskim.

(MUSCLE--DEGENERATION AND REGENERATION)
(ELECTRICITY, INJURIES FROM)

NIKITIN, V.S.

Tin-plating by solder coating. Patent U.S.S.R. 77,943, Dec. 31, 1949.
(CA 47 no.19:9894 '53)

NIKITIN, V.S., byvshiy slesar'.

Infancy of the "Dinamo" plant. Elek. i tepl. tiaga no.11:21-22 N
'57. (MLRA 10:11)

1. Zavod "Dinamo."
(Electric locomotives)

SMIRNOV, M.V., kand.tekhn.nauk; KATS, B.A.; inzh.; NIKITIN, V.S., inzh.

Testing of insulation between the turns of the armature winding
in d.c. machines. Vest. elektroprom. 33 no.9:70-72 S '62.

(MIRA 15:10)

(Electric machinery—Windings)

L 12592-63 EPR/EWP(j)/EPF(a)/EWT(m)/BDS ASD Ps-4/Pr-4/Pc-4

RM/WW

ACCESSION NR: AP3001601

S/0189/63/000/003/0014/0017

70
68

AUTHOR: Nikitin, V. S.; Mal'tsev, A. A.; Pchelkina, M. A.; Vinogradova, Z. F.

TITLE: Infrared spectrum of diborontetrahydroxide B sub 2 (OH) sub 4 and boronmonoxide (BO) sub x

SOURCE: Moscow. Universitet. Vestnik. Seriya 2. Khimiya, no. 3, 1963, 14-17

TOPIC TAGS: infrared spectrum, diborontetrahydroxide, boronmonoxide, polymer of boron

ABSTRACT: The study was undertaken to ascertain the frequencies characteristic for the B—B bond in infrared spectra of diborontetrahydroxide and boronmonoxide. A white modification of boronmonoxide was prepared by heating diborontetrahydroxide to 250-270C in a vacuum, and a brown modification obtained by further heating to 600-650C. By hydrolysis of the white boronmonoxide with heavy water a deuterium-substituted diborontetrahydroxide was obtained, which served to pinpoint the absorption lines of diborontetrahydroxide. The samples were suspended in vaseline oil or in hexachlorobutadiene and subjected to infrared spectroscopy. For diborontetrahydroxide the line at 1150 cm sup -1 was found to represent the B—B valency oscillation. The wide absorption lines of the white and brown modifica-

Card 1/2

L-12592-63

ACCESSION NR: AP3001601

tions of boromonoxide lead to the assumption that both are polymers. ¹ The similarity of the spectrum of the brown modification with that of boric anhydride indicates that the brown boromonoxide is a mixture of boric anhydride with boron, which was confirmed by experiment. Orig. art. has: 5 formulas, 2 charts, and 1 table. ²

ASSOCIATION: Moskovskiy universitet, kafedra fizicheskoy khimii (Moscow University, Department of Physical Chemistry)

SUBMITTED: 27Dec62

DATE ACQ: 09Jul63

ENCL: 00

SUB CODE: 00

NO REF SOV: 000

OTHER: 016

Card 2/2

OSTR VOSTY, Yu.Y.; NIKOLIN, V.V.

Comparative biochemical and histochemical study of lipids in
the liver and heart of pigeons with experimental hypercholester-
olemia B₁. Biol. zhurn. biol. i med. 55/1963/163-165 1963
(M. 2A 17:8)

1. Iz kufel'nykh zhurnalov (Zh. V.V. Ostrovskiy i katedry
obshchey biologii (zav. - V.V. Nikolin) i onkologicheskogo meditsin-
skogo instituta. Izd. Vsesoyuznogo nauchnogo tsentra AN SSSR
V.V. Parinyya.

NIKITIN, V.S.; USKOV, V.I.

A camera devised by the Institute of Mining of the Academy of
Sciences for the computation of dust particles. Trudy Inst.gor.
dela no.2:171-176 '55. (MLBA 9:3)
(Mine dusts) (Microscopy) (Cameras)

NIKITIN, V.S., gornyy inzhener; USKOV, V.I., gornyy inzhener

Setting up a dust control system in underground crushers. Bro'ba
s sil. 2:180-185 '55. (MLRA 9:5)

1. Institut gornogo dela Akademii nauk SSSR.
(DUST--PREVENTION) (ORE DRESSING)

NIKITIN, V. S., Cand Tech Sci -- (diss) "Study of the movement of air in ^{quartz} ~~pipes~~." Mos, 1958. 15 pp; 1 sheet of tables (Acad Sci USSR, Inst of Mining), 150 copies (KL, 35-58, 108)

-42-

NIKITIN, V.S., gornyy inzhener

New device for sampling in the determination of the dust
content of mine air by the gravimetric method. Bor'ba s
sil. 3:186-188 '59. (MIRA 12:9)
(MINE DUSTS) (FILTERS AND FILTRATION)

NIKITIN, V.S. , kand.tekhn.nauk

Improving safe working conditions in pits. Bezop.truda v prom.
3 no.5:12-14 My '59. (MIRA 12:8)

1. Institut gornogo dela AN SSSR.
(Mining engineering--Safety measures)

NIKITIN, V.S., kand.tekhn.nauk

Calculation of air pollution in pits with a recirculation ventilation
system. Nauch. soob. Inst. gor. dela 4:67-73 *60. (MIRA 15:1)
(Mine ventilation)

NIKITIN, V.S., kand.tekhn.nauk

Conference on the problem of controlling dust in strip mines.
Trudy Inst. gor. dela 5:131-133 '60. (MIRA 14:5)
(Mine dusts--Congresses)

NIKITIN, Vladimir Sergeyevich, kand. tekhn. nauk; CHESNOKOV, Mitrofan Mitrofanovich, kand. tekhn. nauk; DIDKOVSKIY, D.Z., red. izd-va; SABITOV, A., tekhn. red.; BOLDYREVA, Z.A., tekhn. red.

[Control of dust and gases in open mine pits] Bor'ba s pyl'iu i gazami na otkrytykh razrabotkakh. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po gornomu delu, 1961. 107 p. (MIRA 14:6)
(Mine dusts) (Mine gases)

NIKITIN, V.S.

Principal systems of natural ventilation of open pits, and the
sources of contamination of their atmospheres. Uch.zap.Mosk.
nauch.-issl.inst.san. i gig.no.8:31-34'61. (MIRA 16:7)
(MINE VENTILATION) (AIR POLLUTION)
(STRIP MINING)

NIKITIN, V.S., kand.tekhn.nauk

Ventilation of stopes and development workings in the shortwall
mining system. Ugol' 36 no.5:59-60 My '61. (MIRA 14:5)
(Mine ventilation)

MILETICH, Anton Fedorovich, kand. tekhn. nauk. Prinsipal uchastiye
PROLOV, N.A., kand. tekhn. nauk; ~~NIKIFOR~~, V.S., kand. tekhn.
nauk, otv. red.; LUCHKO, V.S., red. izd-va; LOMILINA, L.N.,
tekhn.red.

[Air leaks in mines; calculation, regulation and control of
leaks] Utechki vozdukha v shakhtakh; raschet, regulirovanie i
bor'ba s utechkami. Moskva, Gosgortekhnizdat, 1962. 130 p.
(MIRA 15:9)

(Mine ventilation)

VORONINA, Lidiya Dmitriyevna, doktor tekhn. nauk; BASSINOVSKIY, Aleksey Dmitriyevich, kand. tekhn. nauk; NIKITIN, Vladimir Sergeyevich, kand. tekhn. nauk; LUCHKO, V.S., red.; SABITOV, A., tekhn. red. IL'INSKAYA, G.M., tekhn. red.
[Design of mine ventilation] Raschet rudnichnoi ventiliatsii. Moskva, Gosgortekhnizdat, 1962. 486 p. (MIRA 16:1)
(Mine ventilation)

NIKITIN, V.S.

Combination layouts of natural ventilation of open-pit mines.
Gor. i ekon. vop. rasrab. ugol'. i rud. mest. no.1:191-204 '62.
(MIRA 16:7)

(Mine ventilation)

NIKITIN, V.S.; SHARUTIN, A.S.; YES'MAN, B.I.; ASKEROV, K.A.

Qualitative characteristics of drilling fluids used for drilling
wells in absorption horizons. Azerb. neft. khoz. 41 no.9:16-19
S '62. (MIRA 16:6)

(Oil well drilling fluids)

NIKITIN, V.S., kand.tekhn.nauk; SKOBUNOV, V.V., kand.tekhn.nauk

Turbulent diffusion of dust and poison gases in the air of
open-pit mines. Bor'ba s sil. 207-217 '62. (MIRA 16'5)

1. Institut gornogo dela imeni A.A.Skochinskogo.
(Strip mining) (Mine dusts) (Mine gases)

NIKITIN, V.S., kand.tekhn.nauk

Determining the intensity of dust formation sources in open pits.
Nauch. soob. IGD 21:185-195 '63. (MIRA 17:2)

NIKITIN, V.S., kand. tekhn. nauk

Distribution of harmful contaminants in open pits with ventilation
by wind. Ugol' 38 no.6:42-44 Je '63. (MIRA 16:8)

1. Institut gornogo dela im. A.A. Skochinskogo.
(Mine ventilation)

LUGOVSKIY, Sergey Ivanovich; DYMCHUK, Gennadiy Konstantinovich;
DROBOT, Boris Yakovlevich; AVRAMCHUK, Rostislav Nikiforovich.
Prinimali uchastiye: KAR'YENKOV, V.V.; BAKIROV, U.Kh.;
NIKITIN, V.S., kand. tekhn. nauk, retsenzent; STEBAKOV, E.A.,
gorn. inzh., otv. red.

[Ventilation of mines and strip mines] Ventiliatsiia shakht i
kar'erov. [By] S.I.Lugovskii i dr. Moskva, Izd-vo "Nedra,"
1964. 306 p. (MIRA 17:5)

UNITED, U.S. Acad. ...; GASH ...

Study of the dustiness of air ...
Bor'ba s stl. 6:123-129 1964 (1964 11:1)

1. Institut ...

1. The first of the two main groups of the population of the Republic of China (Taiwan) is the Han Chinese, who constitute about 92% of the total population. The second group is the indigenous peoples, who constitute about 8% of the total population.

The Han Chinese are the descendants of the Chinese who migrated to Taiwan from the mainland during the last centuries. They speak the Chinese language and follow the Chinese customs and traditions. The indigenous peoples are the descendants of the native peoples of Taiwan, who speak various languages and follow their own customs and traditions.

NIKITIN, V.S., kand. ~~tekhn.~~ tekhn. nauk

Efforts to control dust in coal mines in England. Ugol' 39
no.6:65-67 ~~July~~ (MIRA 17:7)

1. Institut gornogo dela imeni A.A. Skochinskogo.

NIKOLIN, V.S., and. tekhn. nauk

Eliminating dust during the operation of highly efficient drilling
machinery in strip mines. Ger. zhur. no. 10 October 1964.

(MIRA 1845)

1. Institut gornogo dela im. A.A. Kostomarov.

NIKITIN, Vladimir Tikhonovich; DRAGUNOVA, Lyudmila Markovna;
ZAV'YALOVA, A.N., red.; GERASIMOVA, Ye.S., tekhn. red.

[Planning the production and administrative operations of
an enterprise] Planirovanie proizvodstvenno-khoziaistvennoi
deiatel'nosti predpriatiia. Moskva, Ekonomizdat, 1963. 95 p.
(MIRA 16:8)

(Industrial management)

IOFFE, Naum Mikhaylovich; IVANOV, Vadim Aleksandrovich; NIKITIN,
Vasil'y Vasil'yevich; SOLOV'YEV, V.A.; EPSHTEYN, Ya.V.;
VINOKUR, I.Ye., red.

[Hydraulic suspension system consisting of separate units
for farm tractors] Razdel'no-agregatnaya gidravlicheskaia
navesnaia sistema sel'skokhoziaistvennykh traktorov. [By]
N.M.Ioffe i dr. Izd.2., dop. i ispr. Moskva, Vysshaia
shkola, 1964. 175 p. (MIRA 17:6)

ALEKSEYEV, A.I.; Prinimali uchastiye: IVANOV, A.D.; LEBEDEV, B.F.;
DARENSKIKH, P.V.; BABKIN, N.I.; MEL'NIKOV, V.G.; NIKITIN, V.V.;
MUKHAMELOV, K.A.

Automatic welding of the cylindrical part of a decomposer shell.
Avtom. svar. 14 no.8:78-82 Ag '61. (MIRA 14:9)

1. Trest "Uralstal'konstruktsiya.
(Electric welding)
(Aluminum industry--Equipment and supplies)

PETROV, Vladimir Arsent'yevich; KOLMAKOV, Nikolay Alekseyevich; EPEL'MAN, Gilel' Grigor'yevich. Prinimali uchastiye: NIKITIN, V.V., MOROZOV, I.I.; SIVOKHA, N.V.; UTROBINA, N.I.; NIKITINA, N.N.; PANKOV, N.N.; BAUSHEV, N.P.; TATEVOSOV, K.G., dots.; LIPKIND, L.M.; LEBEDEVA, A.K., inzh.-ekon.; VIL'DAVSKIY, I.M., dots., retsenzent; VOLKOV, S.A., kand. ekon. nauk, dots., red.; CHFAS, M.A. red. izd-va; PETERSON, M.M., tekhn. red.

[Continuous conveyer methods used in the lot production of composite machines] Potochno-konveiernye metody v seriino m proizvodstve slozhnykh mashin; iz opyta Leningradskogo zavoda poligraficheskikh mashin. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1961. 130 p. (MIRA 14:9)

1. Rabotniki Leningradskogo zavoda poligraficheskikh mashin (for Nikitin, Morozov, Sivokha, Utrobina, Nikitina, Pankov, Baushev). 2. Leningradskiy inzhenerno-ekonomicheskii institut (for Tatevosov, Lipkind, Lebedeva).

(Leningrad--Printing machinery and supplies)
(Factory management)

ANTONOV, Nikolay Petrovich; VYGODSKIY, Mark Yakovlevich; NIKITIN, Vladimir
Vasil'yevich; SANKIN, Aleksandr Iosifovich; RYVKIN, A.Z., redaktor;
AKHILANOV, S.H., tekhnicheskiy redaktor

[A collection of problems in elementary mathematics; a manual for
home study] Sbornik zadach po elementarnoi matematike; posobie dlia
samoobrazovaniia. Izd. 3-e. Moskva, Gos. izd-vo tekhniko-teoret.
lit-ry, 1956. 532 p. (MLR 10:1)

(Mathematics--Problems, exercises, etc.)

ANTONOV, Nikolay Petrovich; VYGODSKIY, Mark Yakovlevich; NIKITIN,
Vladimir Vasil'yevich; SANKIN, Aleksandr Iosifovich; POLOVINKIN,
S.M., red.; AKSEL'ROD, I.Sh., tekhn. red.

[Collection of problems in elementary mathematics; a textbook for
self-education] Sbornik zadach po elementarnoi matematike; posobie
dlia samoobrazovaniia. Izd.8., stereotipnoe. Moskva, Fizmatgiz,
1962. 528 p. (MIRA 15:7)
(Mathematics--Problems, exercises, etc.)

NIKITIN, V.V.

SUBJECT USSR / PHYSICS
 AUTHOR ROGOVINA, A.A., DAVIDOVIĆ, N.I., NEBYLICYN, B.F., NIKITIN, V.V.,
 KARGIN, V.A.
 TITLE The Study of the Behavior of Tire Tissues if Subjected to
 Percussion.
 I. Pendulum-Ram for the Testing of Tissue-(Cord)Fibres.
 PERIODICAL Žurn.techn.fis, 26, fasc.12, 2684-2689 (1956)
 Issued: 1 / 1957

A large number of automobil tires are damaged after a very small mileage be-
 cause the outer cover is destroyed by contact with some obstacle. In order to
 study the behavior of the tissue when subjected to such an impact, a pendulum-
 ram was constructed. The ballistic dynamometer by GUDBRANDT, which is usually
 used in practice, has a number of essential faults. These faults can be elimi-
 nated by separating the holding device from the pendulum. This may be attained
 in two ways: these impact tests were carried out on the stationary and immobile
 sample, which is held in a position vertical to the oscillation plane of the
 pendulum. The essential difference between the method of testing the tissue by
 means of a pendulum-ram on the one hand and that on the ballistic dynamometer
 on the other consists in the fact that, in the first case, the velocity of the
 deformation of the fibre grows during the process of expansion, whereas in the
 second case it remains nearly constant. The construction scheme and a photo of
 the pendulum ram is shown. The values obtained for elongation by tearing are
 more or less approximative values, because the actual amounts of these elonga-

NOVOPOL'SKIY, V.I.; NIKITIN, V.V.; SKACHKOV, A.S.

Photoelectric device for measuring power losses in automobile
tire rolling by the inertia method in a testing machine. Kauch.
i rez. 20 no.11:31-35 N '61. (MIRA 15:1)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti.
(Tires, Rubber—Testing)

NIKITIN, V.V.

Automatic switching over from SPD-5 type of feed. Avtom.,
telem. i svyaz' 3 no. 7:35 J1 '59. (MIRA 12:12)

1. Starshiy inzhener lineyno-apparatnogo zala Dnepropetrovskoy
distantsei signalizatsii i svyazi Stalinskoy dorogi.
(Electric circuits)

NIKITIN, V.V., inzhener.

Erecting the antenna tower of the Sverdlovsk television center.
Stroi.prom.34 no.6:10-13 Je '56. (MIRA 9:9)
(Sverdlovsk--Television--Antennas)

USSR/Biology
Plants
Parasites

Nov/Dec 48

The Problem of Egyptian Broom Rape (Orobanchae
Aegyptiaca Pers.); Parasitic on Weedlike Plants
of Turkmen SSR," V. V. Nikitin, M. A. Andreyev,
P. V. Aleksandrov (Deceased), Turkmen Affiliate,
Acad. Sci USSR, Ashkhabad, 3 pp

"Botan Zhur" Vol XXXIII, No 6

Egyptian broom rape has been spreading widely
in Turkmen SSR recently, particularly in the
Ashkhabad region, and has become one of the most

58/49T11

USSR/Biology (Contd)

Nov/Dec 48

prevalent and harmful parasites of melon and
garden crops. Lists weedlike plants which
Egyptian broom rape attacks. Notes that cultivated
crops are much more susceptible to its ravages
than are weedy plants of the same family. Sub-
mitted 20 Nov 47.

58/49T11

58/49T11

NIKITIN, V. A.

NIK 11 IV, V. V.

BLINOVSKIY, K.V.; BORISOVA, A.G.; VASIL'CHENKO, I.T.; MEFFERT, V.V.;
~~NIKITIN, K.K.~~; POYARKOVA, A.I.; SHAPARENKO, K.K.; FEDCHENKO, B.A.;
SHISHKIN, B.K.; ZNDEN, O.A.; VASIL'YEV, A.O., tekhnicheskiy redaktor;
PETROVA, K.T., tekhnicheskiy redaktor

[Flora of Turkmenistan] Flora Turkmenii. Ashkhabad, Izd-vo Turkmen-
skogo filiala Akad.nauk SSSR. Vol.4. 1950. 271 p. (MLRA 10:7)

1. Chlen-korrespondent Akademii nauk SSSR (for Shishkin)
(Turkmenistan--Botany)

Name: NIKITIN, Vasil'y Vasil'yevich

Dissertation: Weed Growth in Turkmeniya

Degree: Doc Biol Sci

Affiliation: Acad Sci Turkmen SSR

Defense Date, Place: 28 Mar 56, Council of the Botanical
Inst imeni Komarov

Certification Date: 29 Sep 56

Source: BMVO 6/57

NIKITIN, Vasil'iy Vasil'yevich

[Weeds of Turkmenistan] Sornaya rastitel'nost' Turkmenii.
Ashkhabad, Izd-vo Akad. nauk Turkmeniskoi SSR, 1957. 580 p.
(MIRA 16:1)
(Turkmenistan--Weeds)

NIKITIN, V.V.

Outlook for introducing the villous vetch of Turkmenistan.
Trudy Bot.inst.Ser.6 no.7:241-243 '59. (MIRA 13:4)

1. AN Turkmenskoy SSR, Ashkhabad.
(Turkmenistan--Vetch)

21
NIKITIN, Vasil'y Vasil'yevich; KERBAYEV, Baki Berdyevich;
OVEZMURADOV, S.O., Kand. biol. nauk, otv. red.; NOSIBOVA, S.G.,
red. izd-va; IVONT'YEVA, G.A., tekhn. red.

[Popular and scientific Turkmen names of plants] Narodnye i na-
uchnye turkmenskije nazvaniia rastenii. Otvet. red. S.O. Obez-
muradov. Ashkhabad, Izd-vo Akad. nauk Turkmenskoi SSR, 1962.
169 p. (MIRA 16:1)

(Turkmenistan--Botany--Nomenclature)

NIKITIN, V.V.

Problem of organizing a highly-efficient feed supply in
Turkmenistan. Izv. AN Turk. SSR. Ser. biol. nauk no.1:3-8
'62. (MIRA 15:3)

1. Institut botaniki AN Turkmenskoy SSR.
(TURKMENISTAN--FORAGE PLANTS)

NIKITIN, V.V.

Activity of the Turkmen Branch of the All-Union Botanical Society
(October 1958-April 1962). Izv.AN Turk.SSR.Ser.biol.nauk no.5:95-
96 '62. (MIRA 15:11)

(TURKMENISTAN--BOTANICAL SOCIETIES)

NIKITIN, V.V.; KOZLOVA, A.G.

Materials on the biology of the germination of sedges in Turkmenistan. Izv. AN Turk.SSR. Ser.biol.nauk no.2:11-18 '63.

(MIRA 16:5)

1. Institut botaniki AN Turkmenskoy SSR.
(TURKMENISTAN--SEDGES) (GERMINATION)

NIKITIN, V.V.; OVEZMURADOV, S.O.

Development of botanical science in Turkmenia and the
strengthening of its ties with practice. Izv. AN Turk.
SSR. Ser. biol. nauk no.3:7-11 '63. (MIRA 17:1)

1. Institut botaniki AN Turkmenskoy SSR.

NIKITIN, V.V.

Third Congress of the All-Union Botanical Society (September
13-28, 1963). Izv. AN SSSR Ser. biol. nauk n. 1, 1964-
94. 164. (MIRA 1964)

1. Institut botaniki AN SSSR, Moskva, USSR.

NIKITIN, V.V., VOOROBUEVA, P.I.

Perennial forage sorghum, a new crop for the south of Central Asia.
Bot.sher. 49 no.2:111-118-19620 N 162. (MIRA 18 1)

1. Institut botaniki AN Turkmenakoy SSR, Ashkhabad.

NIKITIN, V.V.

Plant life forms of the flora of Turkmenia. Bot. zhurn. 50 no. 1-2-3-4
49 Ja '65. MIRA 18.3

1. Institut botaniki AN Turkmenskoy SSR, Ashkhabad.

S/048/61/025/002/005/016
B117/B2i2

AUTHORS: Berlovich, E. Ye., Bonits, M. P. (Polytechnic Institute, Dresden, Eastern Germany), Nikitin, V. V.

TITLE: Lifetime measurement of the first ~~excited states~~ of Tb¹⁵⁹ and Yb¹⁷³ by means of a multichannel time analyzer

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, v. 25, no. 2, 1961, 218-228

TEXT: Present paper was read at the 11th Annual Conference on Nuclear Spectroscopy (Riga, January 25 to February 2, 1961). The authors report on a time analyzer built by them, and suggest a method to check their chosen test conditions, i.e., how to avoid the time lag caused by the instrument. It follows from the circuit diagram (Fig. 1) that the instrument consists of a "slow" and a "fast" part. In the present paper, only the fast part is discussed (Fig. 2). The time and amplitude modulated pulses A and B, which can be used to measure the time delay, hit the spiral delay line Z₀ (Refs. 9, 10). The crystal diode D₁ of the type $\Delta 2B$ (D2V) serves as a rectifier. In

Card 1/R#

S/048/61/025/002/005/016
B117/B212

Lifetime measurement of ...

a certain delay interval there is a linear dependence of the amplitude between the pulses A and B at the outlet I, which is a function of the magnitude of the delay. The crystal diode D₂ serves as coincidence control model. A positive displacement blocks the cathodes of these diodes for certain pulses. The pulse spectrum is via the amplifier passed on to the pulse-height analyzer which records the coincidence curves to be analyzed. The operation of the instrument is demonstrated by the self-coincidence and prompt coincidence curves. A crystal 30 by 30 mm gave the best time resolutions, about $5 \cdot 10^{-10}$ sec. The resolution decreased with larger crystals and lower radiation energy. This is a reason for the deviations of the maximum time resolution, which are shown on the coincidence curves, that were found during the determination of the lifetime of the first excited states of Tb¹⁵⁹ and Yb¹⁷³ with energies of 58 resp. 79 kev. One of the factors, which causes the shift in time of the coincidence curves as a function of the time lag caused by the instrument, is a wrong selection of intensities of the sources to be compared. This selection and also the form of the spectra in the operation range can be controlled easily by means of the "control of

Card 2/7 #

Lifetime measurement of ...

S/048/61/025/002/005/016

B117/B212

single curves". This method is based on the analysis of single pulses which pass through the blocked diode of the rectifier due to the presence of a parasitic capacity (C) and the finiteness of the reverse resistance of the diode. The following features must be observed in a proper preparation of the experiments: 1) The required energy intervals have to be roughly selected for the source to be examined; 2) The integral intensities to be measured have to be equal to that of the control source; 3) the windows of the side channels have to be adjusted so accurately that position and form of the single pulse are the same for the control source and the one to be examined. During tests these conditions have been fulfilled. The evaluation of the curves obtained (Fig. 6) yielded the following results for the half-life of the 58-kev level of Tb^{159} : $T_{1/2} = (1.3 \pm 0.4) \cdot 10^{-10}$ sec. According to Ref. 18 this value was: $T_{1/2} < 10^{-9}$ sec. The following values have been determined for the half-life of the 79-kev state of Yb^{173} : $T_{1/2} = (3.8 \pm 0.5) \cdot 10^{-11}$ sec. The two transitions examined are almost purely magnetic dipole transitions. Table 2 shows a comparison between the authors' data and those of other authors. It is pointed out that the g-

Card 3/4

S/048/62/026, 002/010, 011
B10*/B102

AUTHORS: Berlovich, E. Ye., Gusev, Yu. K., Il'in V. V.,
Nikitin, V. V., and Nikitin, M. K.

REMARKS:

S/048/61/025/002/005/016
B117/B212

Lifetime measurement of ...

factors for the collective rotation are, according to the authors, calculated to be $(g_R)_{Tb159} = 0.44 \pm 0.10$ and $(g_R)_{Yb173} = 0.35 \pm 0.04$. Within the limits of observation errors, these values agree with estimations of a generalized model ($g_R = Z/A$) for a homogenous charge distribution, which is 0.41 for the first case and 0.4 for the second case. There are 7 figures, 2 tables, and 32 references: 7 Soviet-bloc. ✓

4/4 ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe Akademii nauk SSSR (Institute of Physics and Technology imeni A. F. Ioffe of the Academy of Sciences USSR)

Probabilities of transitions

S/048/62/026/002/010/012
B'01/B'02

which excites the 121-keV level, with the gamma quanta resulting from the discharge of this level. The gamma spectrum of Eu^{147} was recorded by means of NaI(Tl) crystals and an 034-33 (FEU 33) photomultiplier. The gamma-gamma coincidences of Eu^{147} and a comparison with the gamma-gamma coincidences of the Co^{60} reference source ($\text{Co}^{60} \rightarrow \text{Ni}^{60}$ transition) were used to calculate the lifetime of the 121-keV level:

$T_{1/2} = (3.3 \pm 0.3) \cdot 10^{-10}$ sec. The coincidence of 600 keV gamma quanta with the conversion electrons of the 198-keV transition was examined at the 198 keV level. The gamma quanta were recorded by means of a single-crystal. The right-hand branch of the coincidence curve had a pronounced exponential course. It was found that $T_{1/2} = (1.31 \pm 0.05) \cdot 10^{-9}$ sec.

These results can be brought into agreement with the sequence $1/2^- \rightarrow 3/2^-$ for the ground state and for the first two excited states. Since the 198-keV transition is a pure E2 transition which excludes the sequence $f_{7/2} \rightarrow h_{9/2} \rightarrow f_{5/2}$ there must be a prohibition which suppresses

Card 2/4

Probabilities of transitions...

S/048/62/026/002/010/032
B101/B102

the M1 component. The results exclude a lifetime of the 121-kev line in the microsecond range. There are 5 figures and 12 references: 10 Soviet and 2 non-Soviet. The two references to English-language publications read as follows: Ref. 5: Bonitz, M., Berlovich, E., Nucl. Instr. and Methods, 9, 13 (1961); Bay, Z., Phys. Rev., 77, 419 (1950).

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe Akademii nauk SSSR (Physicotechnical Institute imeni A. F. Ioffe of the Academy of Sciences USSR)

Card 3/4

S/056/62/042/004/CC7/037
B102/B104

AUTHORS: Berlovich, E. Ye., Gusev, Yu. K., Il'in, V. V., Nikitin, V. V., Nikitin, M. K.

TITLE: Contribution of collective motion to the lifting of the 1-forbiddance

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 4, 1962, 967-972

TEXT: Continuing earlier studies (DAN SSSR, 132, 789, 1960; Nucl. Phys. 23, 481, 1961), the authors determined the lifetimes of the M1 transitions of the type $g_{7/2} \rightarrow d_{5/2}$ for the spherical nuclei $\text{Eu}^{147,149,151}$ just before the range of great deformations, where the collective motion is strongest. It can be assumed that collective motion affects the probability of 1-forbidden transitions if the number of neutrons is below the critical ($N = 89$) and the nucleus is still spherical. The experiments were made with Cd fractions of Ta targets irradiated with 660-Mev protons in the synchrocyclotron of the OIYaI, a multi-channel time analyzer, a scintillation spectrometer with NaI-crystal and an $\Phi 33$ -33 (FEU-33)
Card 1/2

Contribution of collective ...

S/056/62/042/004/007/037
B102/B104

multiplier. Results: Eu^{147} , first excited level 229.5 keV ($g_{7/2}$), lifetime $(1.8 \pm 0.2) \cdot 10^{-10}$ sec; M1 transition to ground state ($d_{5/2}$), delay factor $F = 115$; total internal-conversion coefficient $\alpha = 0.195$. Eu^{149} , first excited level 150 keV ($g_{7/2}$), lifetime $(3.2 \pm 0.2) \cdot 10^{-10}$ sec; M1 transition to the ground state ($d_{5/2}$), $F = 78$; $\alpha = 0.63$. Eu^{151} , first excited level 21.7 keV ($g_{7/2}$), lifetime $(3.4 \pm 0.2) \cdot 10^{-9}$ sec; M1 transition to ground state ($d_{5/2}$), $F = 47$; $\alpha = 29.1$. The low values of the F-factors and their smooth decrease when approaching the range of deformed nuclei, in the nuclear range considered, indicate an increasing contribution of collective motion in the real nuclear wave functions, leading to progressive weakening of the l-forbiddance. There are 4 figures and 1 table.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskii institut Akademii nauk
SSSR (Leningrad Physicotechnical Institute of the Academy of
Sciences USSR)
SUBMITTED: November 11, 1961
Card 2/2

V. A simple method of light separation during quantitative absorption analysis of solutions. L. V. Ponomarev and V. V. Nikulin. *Uchenye Zapiski Kazan. Univ.*, 113, No. 9, 1970 (1970); *Referat. Zhur., Fiz.*, 1973, No. 1829. A parallel pencil of rays coming from a light source and passing through a condenser falls on a double cell, one half of which is filled with a pure solvent, and the other half with the soln. to be analyzed. With the aid of 2 mirrors, a ray passing through the solvent falls on the lower part of an aperture in a spectrograph. A ray passing through the soln. goes directly over the first ray and falls on the upper part of the aperture. The upper edge of one mirror plays the role of a diaphragm which separates these rays and produces a sharply defined border on the aperture of the spectrograph. In this way a spectrum for comparison and an absorption spectrum of the soln. being studied appear on the spectrogram simultaneously. A double quartz cell cemented with Glyptal and mirrors with external aluminization on the glass backing and with a sufficiently high reflection coeff. in the ultraviolet range of the spectrum are used. The light source is an arc of a.c. The spectra are photographed with the aid of an ISP-23 quartz spectrograph with aperture width of 0.01 mm. An analysis of aq. solns. of KNO_3 , NaNO_3 , NaHSO_4 , and KI is made. Error in analysis comprises 3-4% of the fixed concn. The method can be used for analysis of single-component systems. Marjorie Ketner

NIKITIN, V.V.

Comparing the frequencies of quartz and molecular oscillators.
Izv.vys.ucheb.zav.; radiofiz. 1 no.2:190-191 '58.

(MIRA 11:11)

1. Fizicheskiy institut im P.N. Lebedeva AN SSSR.
(Oscillations)

22266

S/109/61/006/005/013/027
D201/D303

9.2582 (1055, 1163)

AUTHORS: Basov, N.G., Nikitin, V.V., and Orayevskiy, A.N.
TITLE: Investigation into the dependence of the frequency of molecular generators on various parameters. Part I (Theory, line $J = 3$, $K = 2$)

PERIODICAL: Radiotekhnika i elektronika, v. 6, n. 5, 1961, 796-805

TEXT: The work presented in this article was undertaken in order to explore the possibility of utilizing a molecular generator as an absolute frequency standard having an accuracy of about 10^{-10} . In order to determine the type of construction required and its operation, a detailed account of how its frequency depends on the various parameters has been undertaken. Several attempts to evaluate the influence of various factors in the oscillation frequency have been made by N.G. Basov, and A.M. Prokhorov (Ref. 1: Uspekhi fiz.

Card 1/40

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D201/D303

Investigation into the ...

nauk 1955, 1, 7, 485) and by K. Shimoda, T.C. Wang and C.H. Townes (Ref. 2: Phys. Rev. 1956, 5, 102, 5, 1308), the dependence of the frequency of the molecular generator on the resonant frequency of the resonator being explained in Ref. 2 (Op.cit.). It was shown that the irregularities of beam emission along the resonator introduce frequency drift: The influence of the non-resolved components of the hyperfine structure was shown by K. Shimoda (Ref. 3: J. Phys. Soc. Japan 1957, 12, 1006; 1958, 13, 939); the dependence of the frequency drift of the molecular generator based on the hyperfine structure on the voltage of the sorter and on the beam intensity has been explained by N.G. Basov and A.N. Orayevskiy (Ref. 4: Radiotekhnika i elektronika, 1959, 4, 7, 1185). The results discussed cannot be taken, however, as final since none of the authors take into account the real velocity spread of molecules. First the influence of various parameters, including the velocity spread of molecules has been analyzed. Starting with

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$$\frac{\bar{\kappa}'}{\bar{\kappa}''} = 2Q \frac{\omega_0 - \omega}{\omega}, \quad (1)$$

given in Ref. 1 (Op.cit.) for the oscillations frequency of a molecular generator where

$$\bar{\kappa} = \bar{\kappa}' + i\bar{\kappa}''$$

is the average complex polarization of the molecular beam, ω - is the required frequency, ω_0 - the self resonant frequency of the resonator having the quality factor Q , it is shown that this equation provided $\bar{\kappa}$ is properly evaluated, must take into account all factors affecting the frequency and its stability. These, state the authors, are listed in Ref. 4 (Op.cit.). After several mathematical transformations and assumptions, the Eq. (1) for two levels is derived as

$$\omega = \omega_1 \left[1 + \frac{\omega_0 - \omega_1}{\omega_1} \frac{Q}{Q_1} G + \Delta \right] \quad (6)$$

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Investigation into the ...

where

$$G = \frac{\sum_m |d_m|^2 \gamma_m^{-1} J_m^c}{\sum_m |d_m|^2 \gamma_m^{-1} J_m^s}; \quad \Delta = \frac{\sum_m \eta_m |d_m|^2 \gamma_m^{-1} J_m^s}{\sum_m |d_m|^2 \gamma_m^{-1} J_m^s} \quad (7)$$

and ω_1 is such that $\omega_m = \omega_1 + \eta_m$; ω_m - frequency of the molecular transition; d_m - matrix element of the dipole moment $d_m = d_0 \lambda_m$ where d_0 - the dipole moment, λ_m determines d_m on quanta numbers characterizing the given transition;

$$\gamma_m = \gamma \frac{\lambda_m^2}{\bar{\theta}^2}; \quad \gamma = \frac{d^2 \bar{\theta}}{\hbar};$$

$\bar{\theta}$ - the field amplitude in the resonator; $\bar{\theta}$ - the average transient time of molecules through the resonator. J_m^s and J_m^c are given by

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$$J_m^a = \int_0^\infty F(\theta) \left(1 - \frac{\sin \gamma_m \theta}{\gamma_m \theta}\right) d\theta,$$

$$J_m^c = \int_0^\infty F(\theta) \frac{1 - \cos \gamma_m \theta}{\gamma_m \theta} d\theta \quad (5)$$

where $F(\theta)$ - time distribution of molecules in resonator. Functions G and Δ have been evaluated using an electronic computer and are represented graphically for the spectral line of ammonia $N^{14}H_3$, $J = 3$, $K = 3$. The rest of the theoretical results are based on N.G. Basov, G.M. Strakhovskiy, and I.V. Cheremiskin (Ref. 5: Radiotekhnika i elektronika 1961, 6, 6) and given as graphs. Fig. 3 shows the dependence of frequency on the pressure p in the molecular beam source with factor 3 compensated for line $J = 3$, $K = 3$, $N^{14}H_3$. The pressure p is given in relative units. Fig. 4 shows the dependence

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of frequency on the voltage at the sorter. Effect No. 3 is compensated for the line $J = 3$, $K = 3$ $N^{14}H_3$. Fig. 5 is the same as Fig. 4 but apparently for $J = 3$, $K = 2$ $N^{14}H_3$. [Abstractor's note: This would seem to be an error. The graph shows the detuning Δf as function of pressure p in the source]. The experimental verification of the theoretical results was carried out on a molecular generator using the line of the inversion transition of ammonia $N^{14}H_3$ $J = 3$, $K = 2$ which has no quadruples of the hyperfine structure. Three exactly similar generators were used each having two molecular beams running in opposition. The schematic diagram of the generator is shown in Fig. 7. In it a - sources of molecular beams; 1 - quadruple condensers, c - resonator; d - diaphragms cooled by liquid nitrogen. The resonator was made of invar, excited in E_{010} mode, the length of the resonator was 11.2 cm which corresponded to the transit width of the line of 1 Kc/s, $q = 9000$, timed within a few megacycles. Sorting of molecules according to their energy le-

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S/109/61/006/005/013/027
D201/D303

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vels was achieved using quadruple condensers having a length of 15 cm. A diaphragm was used to increase the beam intensity. The aperture of the diaphragm was 0.6 cm. The diaphragm was cooled by liquid nitrogen the molecule beam was obtained by a grid having square holes $0.05 \cdot 0.05 \text{ mm}^2$, spaced 0.05 mm from each other. The signal from two molecular generators was applied to a balanced mixer of a superheterodyne receiver, the local oscillator of which was stabilized by a cavity resonator. The IF was 60 Mc/s, the pass band of the IF amplifier 2 Mc/s. At the output, the difference frequency of the two generators determined from a Lissagian figure was compared with the frequency of an audio generator which in turn, by using a crystal controlled generator could have the frequency adjusted and measured with an accuracy of 0.1 to 1 c/s. The pressure within the source was measured by a pressure tube JT-2 (LT-2). The overall tuning accuracy of the molecular generator achieved by adjustments of its various parameters was around 3c/s. The experimental results are given in the form of graphs. It is

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stated in conclusion that a molecular generator, having two similar and opposite beams working at a line without a hyperfine structure and having a symmetrical construction, can be used as an absolute standard of frequency time with an accuracy of 10^{-10} . There are 10 figures and 6 references: 3 Soviet-bloc and 3 non-Soviet-bloc. The references to the English-language publications read as follows:
K. Shimoda, T.C. Wang, C.H. Townes, Phys. Rev. 1956, 5, 102, 5, 1308
K. Shimoda, J. Phys. Soc. Japan 1957, 12, 1006; 1958, 13, 939;
J.P. Gordon, Phys. Rev. 1955, 994, 1253.

X

ASSOCIATION: Fizicheskii institut im P.N. Lebedeva AN SSSR (Institute of Physics im. P.N. Lebedev, AS USSR)

SUBMITTED: June 17, 1960

Card 8/10

8

S/109/62/007/005/012/021
D230/D308

9.2574

AUTHORS: Nikitin, V.V., and Orayevskiy, A.N.

TITLE: Investigating the frequency tuning of a molecular oscillator by modulating the radiation line by means of an external magnetic field

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 5, 1962,
859 - 865

TEXT: A theoretical and experimental investigation of the alternative tuning method by means of the external magnetic field is presented, applied to a maser using the line $J = 3$, $K = 2$ $N^{14}H_3$ and two equal and opposite molecular beams. The physical principle of magnetic tuning, relying on a split of the spectral line, is explained, and basic formulas are given for the frequency of oscillation for the simpler case of two identical energy levels and a single spectral line in the absence of a magnetic field. Corresponding expressions follow for the more general condition of two spectral line components, in terms of resonator natural frequency, Q-factors of

Card 1/2

NIKITIN, V. V.

An oscillator operating on two opposing beams of $N^{15}H_3$ ammonia
molecules. Radiotekh. i elektron. 8 no.1:153-157 Ja 1963.
(MIRA 16:1)

(Masers)

BASOV, N.G.; MARKIN, Ye.P.; NIKITIN, V.V.

Output power of a neon-helium laser as a function of various
parameters. Opt. i spektr. 15 no.3:436-438 S '63.
(MIRA 16:10)

BASOV, N.G.; MARKIN, Ye.P.; NIKITIN, V.V.

Some characteristics of an optical maser operating on a Ne and He mixture with a $\lambda = 3.39$ micron. Radiotekh. i elektron. 8 no.12: 2084-2086 D '63. (MIRA 16:12)

1. Fizicheskiy institut im. P.N.Lebedeva AN SSSR.

L 17111-65 EWG(j)/EWA(k)/FBD/EWT(1)/EWT(m)/EPF(c)/EEC(k)-2/EPF(n)-2/EPR/EEC(t)/
T/EEC(b)-2/EWP(k)/EWP(b)/EWA(m)-2/EWA(h) Pf-L/Pi-L/P1-L/Pn-L/Po-L/Pr-L/Ps-L/
Pu-L/Pe-L IJP(c)/ASD(a)-5/AFWL/SSD/AEDC(a)/AFETR/RAEM(a)/ESD(gs)/ESD(t) WG/JD
ACCESSION NR: AP5000557 8/0051/64/017/006/0953/0954

AUTHOR: Markin, Ye. P.; Nikitin, V. V.

TITLE: Xenon-helium laser at $\lambda = 3.50$ microns

SOURCE: Optika i spektroskopiya, v. 17, no. 6, 1964, 953-954

TOPIC TAGS: gas laser, xenon helium laser, laser output

ABSTRACT: As reported in earlier papers by W. R. Bennet (Appl. Optics Suppl. No. 1, on Opt. Masers, 24-61, 1962) and N. G. Basov and others (Radiotekhnika i elektronika 8, 2084, 1963), the strongest stimulated emission in a xenon-helium laser is noted for the $3d_4-2p_9$ xenon line at $\lambda = 3.50 \mu$. According to R. A. Paananen and D. L. Bobroff (Appl. Phys. Letts. 2, 99, 1963), the gain for this line corresponds to 50 db/m. In order to derive the optimum conditions for maximum output, the authors of the present paper have investigated (in June 1963) the power output of a xenon-helium laser at $\lambda = 3.50$ and 3.36μ as a function of the following factors: the diameter of the discharge tube, the pressure of the gas mixture, the pumping power, the length of the gas discharge, and others. Experiments were performed with a laser described in an earlier paper by the authors and N. G. Basov (Optika i Spektroskopiya, 15, 436, 1963). Plane, dielectric- and metal-coated mirrors; and three

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L 1711-65

ACCESSION NR: AP5000557

discharge tubes with diameters of 8, 12, and 20 mm were used. Although the maximum laser power was observed for tubes with pressures within the 1.7--2 mm Hg range, and in the case of $\lambda = 3.36 \mu$ and an 8-mm tube operated at a pressure of 0.7 mm Hg, the operation of a laser which incorporates 8 and 12 mm tubes was stable within a wide range of pressures from 0.2 to 20 mm Hg and up. Stable operation is also reported for a 2--3 cm discharge at 1 watt pumping power. In the case of $\lambda = 3.50$ and 3.36μ and a 12-mm tube, the maximum power was developed when the Xe-He mixture was under 2 mm Hg pressure and the pumping power was approximately 50 watts. The laser output increases linearly with the length of discharge (from approximately 300 mm). The partial pressures of Xe and He were in the ratio of 1:100, respectively. "The authors thank V. P. Shchedrin for his help." Orig. art. has: 3 figures.

ASSOCIATION: none

SUBMITTED: 02Mar64

ENCL: 00

SUB CODE: EC

NO REF SQV: 002

OTHER: 002

ATD PRESS: 3149

Card 2/2

L 57545-85 EWA(k)/FBD/ENG(r)/EWT(1)/EWT(m)/EEC(k)-2/EWP(1)/EEC(t)/I/EWP(t)/
EEC(b)-2/EWP(k)/EWP(b)/EWA(m)-2/EWA(h) Pf-4/Pl-4/Pl-4/Pm-4/Pn-4/Pe-4/Peb SCTB/
IJP(c) WG/JD/JG

ACCESSION NR: AP5014611

UR/0181/65/007/006/1902/1904

AUTHOR: Basov, N. G.; Yeliseyev, P. G.; Nikitin, V. V.; Lishina, A. V.; Maslov,
V. N.; Nashel'skiy, A. Ya.

TITLE: A semiconductor GaAs_{1-x}P_x junction laser 25

79
78
B

SOURCE: Fizika tverdogo tela, v. 7, no. 6, 1965, 1902-1904

TOPIC TAGS: laser, semiconductor laser, junction laser, injection laser, stim-
ulated emission, gallium arsenide, gallium phosphide

ABSTRACT: A GaAs_{0.85}P_{0.15} pulsed injection laser operating at 77K is described.
The monocrystalline solid solution of GaAs_{0.85}P_{0.15} was prepared by epitaxial growth
(sandwich method). The p-n junction was formed at a depth of 26 μ by diffusing zinc
at 850C for 2.5 hr into a polished 6.5 μ thick wafer of GaAs_{0.85}P_{0.15}. Coherent
emission was observed at 7420 \AA at a threshold current density of 5900 amp/cm².
A high resolution spectrum of laser emission showed multimode oscillations similar
to those of GaAs injection lasers. The high threshold current density was attri-
buted to optical inhomogeneity of the epitaxial film. Dimensions of the laser,
pulse duration, and repetition rate are not given. Orig. art. has: 2 figures.

[CS]

Card 1/3

L 57545-65

ACCESSION NR: AP5014611

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR, Moscow (Physics
Institute, AN SSSR)

SUBMITTED: 28Jan65

ENCL: 00

SUB CODE: SS

NO REF SOV: 001

OTHER: 004

ATD PRESS: 4037

Card

2/2

L 3977-66 EWA(k)/FBD/ENT(1)/EEC(k)-2/T/ENP(k)/ENA(h)-2/ENA(h) SCTB/IJP(c) WG
 ACCESSION NR: AP5025404 UR/0181/65/007/010/3128/2130

AUTHOR: Basov, N. G.⁴⁴; Zakharov, Yu. P.⁴⁴; Nikitin, V. V.⁴⁴; Sheronov, A. A.⁴⁴ 62
 60

TITLE: GaAs junction laser with a nonuniform distribution of injected current 23

SOURCE: Fizika tverdogo tela, v. 7, no. 10, 1965, 3128-3130 25, 44

TOPIC TAGS: laser, junction laser, injection laser, semiconductor laser, GaAs, p n junction, injection current, coherent radiation, recombination radiation

ABSTRACT: The effect of an uneven distribution of the injection current along the p-n junction area of a GaAs laser diode on its emission was experimentally investigated. Diodes with a 2-mm overall cavity length and a 0.4-mm width were used in the experiments. The p-side of a standard laser with polished ends was cut perpendicular to diode's length down to the junction area (see Fig. 1 of Enclosure), resulting in two electrically separated cavity sections with a contact attached to each part. The coupling resistance between the diodes was large in comparison with the resistance of the contacts and the bulk resistance. The diode, cooled to the liquid nitrogen temperature, was excited by current pulses of 1-μsec duration. The lowest threshold current was required when injection current densities in both sections of the diodes were equal. The wavelength of coherent emission at the threshold current was larger

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L 3977-66

ACCESSION NR: AP5025404

by about 20 Å than the wavelength of emission during uneven excitation regime, i.e., when current $I_1 = I_2$. When I_2 was constant while I_1 was increased from 0 to 1 amp, the frequency of laser emission at $\lambda \sim 8430$ Å was gradually shifted toward higher frequencies by 50 cps. When I_1 was further increased, generation was achieved at $\lambda \sim 8450$ Å while coherent emission at $\lambda \sim 8430$ Å decreased and finally disappeared. At the same time the maximum of the line (half width ~ 30 Å) was shifted by ~ 2 Å toward the longer wavelengths. A similar quenching effect at ~ 8430 Å was observed in the direction perpendicular to the axis of the diode. It was determined that when the injection current was sufficiently large in one section of the laser a large increase in power output was obtained by simultaneously injecting current through both contacts on the p-side of the diode. Since the slope of the power-current curve of the dual diode structure increased approximately two times in comparison with that of a single section diode, the use of the dual structure for modulation may be more useful than that of a standard injection laser. Orig. art. has: 1 figure. [CS]

ASSOCIATION: Fizicheskii institut, im. P. N. Lebedeva AN SSSR, Moscow (Physics Institute, AN SSSR)

SUBMITTED: 17May65
NO REF SOV: 001

ENCL: 01
OTHER: 002

SUB CODE: EC, OP
ATD PRESS: 4118

Card 2/3

L 3977-66

ACCESSION NR: AP5025404

ENCLOSURE: 01

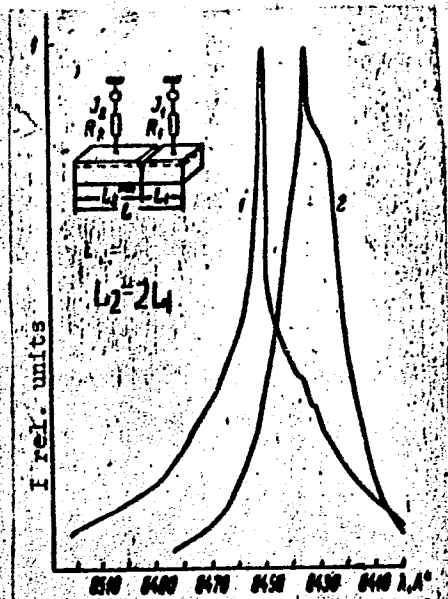


Fig. 1. Emission spectra near the threshold

1 - Current densities in both parts of the dual diode structure are equal, $I = 19$ amp; 2 - current densities in the two parts are not equal, $I_1 = 0$, $I_2 = 34$ amp.

Card 3/3

L 4964-66 EWA(k)/FBD/EWT(1)/EWT(m)/EEC(k)-2/T/EWP(+)/EWP(k)/EWP(b)/EWA(m)-2/EWA(h)
 ACC NR: AP5027449 SOURCE CODE: UR/0181/65/007/011/3460/3461
 SCTB/IJP(c) WG/JD/JG 44
 AUTHOR: Basov, N. G.; Zakharov, Yu. P.; Nikitin, V. V.; Sheronov, A. A. 44
 ORG: Physics Institute im. P. N. Lebedev, AN SSSR, Moscow (Fizicheskiy institut AN SSSR) 44 54 B
 TITLE: Interaction between optically coupled GaAs diode lasers
 SOURCE: Fizika tverdogo tela, v. 7, no. 11, 1965, 3460-3461
 TOPIC TAGS: solid state laser, 25, 44 gallium arsenide 37 laser, 21 laser coupling, laser synchronization, laser beam, beam quenching
 ABSTRACT: Two systems of optical coupling between p-n GaAs diode lasers—"longitudinal," in which laser beams coincide, and "transverse," in which they are perpendicular to each other—were investigated. In both cases, the diodes were prepared in the form of Fabry-Perot resonators and set up on the same substrate from 5 to 100 μ apart. The effectiveness of beam quenching for the transversely coupled lasers was 1%. The wavelength of the quenching laser emission was greater than that of the quenched and the beam entered the quenched laser laterally. Beam quenching in the longitudinally coupled system was observed only when the wavelength of the quenching emission was greater than that of the quenched. Similar effects were observed elsewhere.

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ACC NR: AP5027449

(A. Fowler, J. Appl. Phys., 35, 2275, 1964; J. Appl. Phys. Lett., 3, 1, 1963). The low effectiveness of quenching in both cases was attributed to the difficulties experienced in accurately setting up both diodes on the same substrate. Improved (~20%) beam quenching was achieved by means of special diodes, each with two resonators, described elsewhere by the authors (FTT, 7, 3128, 1965). The quenching effect is potentially applicable in computer technology (high-speed optical keying). Orig. art. has: 1 figure. [YK]

SUB CODE: EC/ SUBM DATE: 15Jun65/ ORIG REF: 001/ OTH REF: 003

ATD PRESS: 4131

Card *mlr*
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BASOV, N.G.; ZAKHAROV, YU.F.; NIKITIN, V.V.; SHERONOV, A.A.

Laser on a GaAs p-n junction with nonuniform distribution
of the injection current. Fiz. tver. tela 7 no. 10:1812-1815
O '65. MIRA 18:11

L. Fizicheskiy institut imeni Lebedeva AN SSSR, Moskva.

L 23391-66

ACC NR: AT6009314

6

tor are also investigated. Using a neon helium mixture and a special laser design, the authors obtained a power of 100 MW at 1.15μ with an optimal tube radius of 8 mm and length 3 meters. The angular modulation characteristics were measured as a function of the output power. Reduction of the beam divergence by filtering out certain modes is discussed. Rotating-laser apparatus constructed for the measurement of the laser emission spectrum (a modification of the Sagnac experiment) is described. The results show that the output power of the laser can be increased by adding a buffer gas to intensify the decay of the metastable neon, by increasing the temperature of the working gas, by using pulsed excitation to populate the upper working level, by increasing the resonator length and the length of the discharge tube, and by decreasing the transverse dimensions of the discharge tube. The authors thank Yu. P. Trokhin, V. N. Lukanin, B. I. Prokopov, B. I. Belov, F. S. Titov, and A. F. Suchkov for a discussion of the results and help with the calculations. Orig. art. has: 16 figures and 13 formulas.

SUB CODE: 20/ ORIG REF: 022/ OTH REF: 020/ SUBM DATE: none

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L 44603-66 EWT(1)/EWT(m)/EEC(k)-2/T/EWP(t)/ETI/EWP(k) IJP(c) WG/JD/JG
ACC NR: AP6030983 SOURCE CODE: UR/0181/66/008/009/2816/2818

AUTHOR: Basov, N. G.; Drozhbin, Yu. A.; Zakharov, Yu. P.; Nikitin, V. V.;
Semenov, A. S.; Stepanov, B. M.; Tolmachev, A. M.; Yakovlev, V. A.

ORG: Physics Institute im. P. N. Lebedev, AN SSSR, Moscow (Fizicheskiy institut AN SSSR)

TITLE: The effect of injection current on the temporal characteristics of a GaAs laser

SOURCE: Fizika tverdogo tela, v. 8, no. 9, 1966, 2816-2818

TOPIC TAGS: solid state laser, semiconductor laser, gallium arsenide, laser, injection laser, *ELECTRIC CURRENT, INJECTION CURRENT*

ABSTRACT: In an investigation of the temporal characteristics of a GaAs laser the radiative delay time (τ_g) was determined as a function of the injection current. Ordinary diodes, prepared by means of the diffusion process, were placed in a dewar at the liquid N temperature. The laser was excited by a current oscillator with pulse amplitudes from 4 to 40 amp and a duration of 40 nanosec. Several diodes were investigated at threshold currents from 1.8 to 4 amp. The dependence of τ_g on injection current indicates that the value of τ_g approaches 1.8×10^{-9} sec. This corresponds approximately to the spontaneous radiative lifetimes for electrons and holes calculated theoretically elsewhere (W. P. Dumke, Phys. Rev., 132, 1998, 1963). With a 16-fold

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ACC NR: AP7000135

SOURCE CODE: UR/0115/66/000/011/0092/0093

AUTHOR: Drozhbin, Yu. A.; Nikitin, V. V.; Semenov, A. S.; Stepanov, B. M.; Tolmachev, A. M.; Yakovlev, V. A.

ORG: none

TITLE: A method of measuring the inertia of semiconductor lasers

SOURCE: Izmeritel'naya tekhnika, no. 11, 1966, 92-93

TOPIC TAGS: laser emission, semiconductor laser, minority carrier

ABSTRACT: A new method is proposed for measuring the delay time (inertia) between the laser diode emission and the injection current, which makes it possible to determine the upper frequency limit of the laser and the lifetime of the minority carriers. The time delay is determined by fixing the time of the leading edge of the injection pulse and the instant of appearance of laser emission. These times are displayed on a cathode ray screen as marks on a time base. The equipment consists of two current pulse oscillators, trigger generator, a blocking pulse circuit, a sweep generator, an optical system, a calibrated cable, and an electron optical transducer. The injection pulse signal is carried by the calibrated cable to a pair of deflection plates in the transducer. The laser emission is focussed on the photostage of the transducer, producing a beam of electrons, which are accelerated through the transducer tube. This beam is de-

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UDC: 621.375.4

ACC NR: AP7000135

lected by the sweep generator so as to form the timed base line. The distance from the beginning of this line and the injection pulse is the delay time or inertia. The error of measurement is calculated to be $5 \cdot 10^{-11}$ sec. This error can be decreased to 10^{-11} sec by taking better account of the travel time of the electrons in the beam and improving the resolution time of the transducer. A delay time of $6 \cdot 10^{-11}$ sec was measured for a GaAs laser. Orig. art. has: 2 figures.

SUB CODE: 20/

SUBM DATE: 07May66/

ORIG REF: 003/

OTH REF: 003

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L 24295-66 FBD/EWT(1)/EWT(m)/EEG(k)-2/T/EWP(t)/EWP(k)/EWA(h) IJP(c) WG/JD

ACC NR: AP6012462

SOURCE CODE: UR/0181/66/008/004/1060/1063

AUTHOR: Basov, N. G.; Dudenkova, A. V.; Krasil'nikov, A. I.; Nikitin, V. V.; Fedoseyev, K. P. 2c

ORG: Physics Institute im. P. N. Lebedev, AN SSSR, Moscow (Fizicheskiy institut AN SSSR)

TITLE: An $\text{InAs}_{1-x}\text{Sb}_x$ p-n junction laser

SOURCE: Fizika tverdogo tela, v. 8, no. 4, 1966, 1060-1063 50
B

TOPIC TAGS: solid state laser, indium arsenide antimonide

ABSTRACT: This article is a continuation of earlier research to develop materials for semiconductor lasers over a broad optical range (see Fig. 1). Indium arsenide-antimonide bingle crystals were grown by the Czochralski method, using equipment described elsewhere (I. F. Ollon, H. L. Goldstein, Appl. Phys. Lett., 2, 170, 1963). The parameters of the crystals, containing ~2% As, are shown in Table 1. The density of dislocations in the crystals was $5 \cdot 10^3 - 1 \cdot 10^4 \text{ cm}^{-2}$. Semiconductor diode lasers were prepared from the crystals by diffusion of Zn at 1023K over a period of 40 min. A Fabry-Perot type resonator was achieved by cleaving and polishing the <110> surfaces to within 5-7 min of arc. Using apparatus described in detail in the article, the laser emission spectra were investigated as a function of the injection current through the p-n junction at 77K. Line narrowing and a 200 Å shift of the intensity 2

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ACC NR: AP6012462

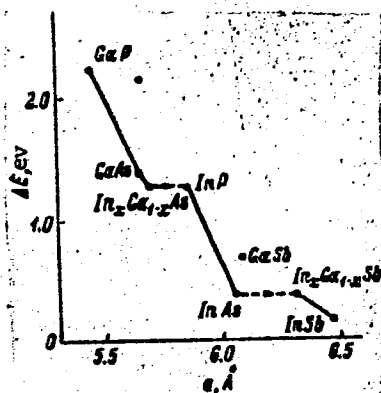


Table 1. Parameters of the crystals

Compound	$T, ^\circ K$	Concentration of electrons n, cm^{-2}	Electron mobility $\mu, cm^2 \cdot V^{-1} \cdot sec^{-1}$
InAs	300	$3.4 \cdot 10^{16}$	26
		$3.0 \cdot 10^{16}$	10
	77	$3.1 \cdot 10^{16}$	45
		$1.2 \cdot 10^{16}$	14
InAs _{1-x} Sb _x	300	$3.2 \cdot 10^{16}$	25
		$1.6 \cdot 10^{16}$	12
	77	$3.0 \cdot 10^{16}$	33
		$1.6 \cdot 10^{16}$	15

Fig. 1. Dependence of the width of forbidden gap on the lattice constant.

maximum (at 3.19μ) were observed at the injection current of 1.5 amp. Stimulated emission occurred at current densities of $800-1000 \text{ amp/cm}^2$. A multimode structure was observed at currents exceeding the threshold by 1.5 times, with the mode spacing and halfwidth being 20 and 15 \AA , respectively. This agrees satisfactorily with the

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theoretical results of Ollon et al. Diodes prepared from various parts of the bar but with identical resonator length, emitted at different wavelengths. This can be explained by the uneven lengthwise distribution of arsenic due to a small coefficient of segregation. The maximum red shift of radiation was $\approx 500 \text{ \AA}$. Orig. art. has: 1 table and 5 figures. [YK]

SUB CODE: 20/ SUBM DATE: 11Aug65/ ORIG REF: 002/ OTH REF: 003/ ATD PRESS:

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